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Episodic Memory Decline Symptoms are Strong Predictors of Alzheimer's Disease Defined by Positron Emission Tomography in Participants with Amnestic Mild Cognitive Impairment and Mild Dementia

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Objectives: We aimed to determine the performance of integrating EMDS in predicting AD among participants with amnestic mild cognitive impairment (MCI) or mild dementia.

Materials and Methods: Amnestic MCI and mild dementia participants were recruited from memory clinic at King Chulalongkorn Memorial Hospital, Thailand. In-house informant-based questionnaire was used to interview participants' caregivers, which comprise of (A) 7 questions on changes in EMDS during the past 10 years and (B) 6 questions on the average daily frequency of EMDS in the previous month. Amyloid (Florbetaben) and Tau (PI-2620) Positron Emission Tomography (PET) were performed. The result with A+T+ was defined as AD, the result with A+T- or A-T- were define as other cognitive impairments. Multivariable logistic regression models were employed to construct the predictive model. The likelihood ratio test and area under the curve of receiver operating characteristic curve (AUC-ROC) were used to identify the best model.

Results: Among 50 participants enrolled (median [interquartile range] age 72 [65-77] years), 24 (48%) had AD. A comparison of AD and other cognitive impairments is shown in *Table 1*. The combination of 3 symptoms, including (1) consistently worse in remembering events during the past 10 years; (2) at least once daily momentary confabulation; and (3) at least once daily repetitive questioning, had the best

diagnostic performance in parsimonious model for predicting AD with AUC-ROC of 0.77 (95% confidence interval [CI]: 0.64-0.90). *(Figure 1)*

Conclusion: EMDS are still a valuable clinical marker for predicting AD in participants with amnestic MCI and mild dementia. The combination of selected EMDS might be a useful screening tool for selecting patients for further AD specific biomarker investigations.

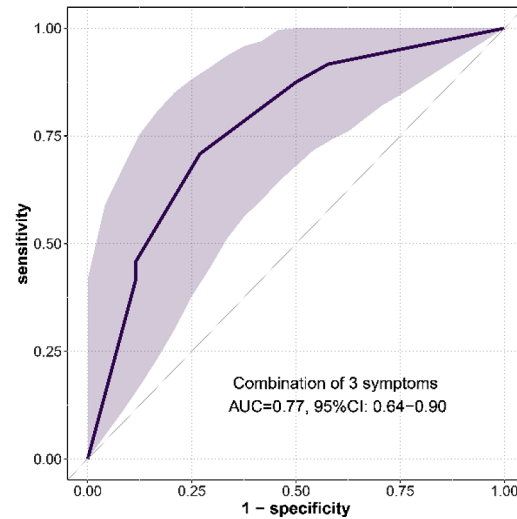Table 1 Participants characteristics and bivariate analysis of episodic memory decline symptoms (EMDS) (N=50)

Characteristics	Alzheimer's disease (A+T+) (N=24)	Other cognitive impairments (N=26; A+T- =13, A-T- =13)	p-value
Age (years) [median (IQR)]	73.5 (65-77.5)	72 (65-76)	0.690
Education (years) [median (IQR)]	16 (12-16)	15 (9-16)	0.603
Female sex [n (%)]	16 (66.67)	19 (73.08)	0.621
Cognitive staging [n (%)]			0.159
- MCI	14 (58.33)	20 (76.92)	
- Mild dementia	10 (41.67)	6 (23.07)	
A Consistently worse in episodic memory decline symptoms during the past 10 years [n (%)][1] (Reference: improved, stable, or worse but inconsistently during the past 10 years)			
A1 Recalling conversation in the past few days	22 (91.67)	13 (50.00)	0.001
A2 Remembering events in the past few days*	21 (87.50)	13 (50.00)	0.005
A3 Remembering important events in the past month	20 (83.33)	14 (53.85)	0.026
A4 Repetitive telling old story	15 (62.50)	9 (34.62)	0.049
A5 Repetitive questioning	18 (75.00)	8 (30.77)	0.002
A6 Forgetting to turn things off	13 (54.17)	7 (26.92)	0.049
A7 Misplacing	15 (62.50)	12 (46.15)	0.247
B At least once daily episodic memory decline symptoms in the previous month [n (%)][2] (Reference: average frequency of less than once daily in the previous month)			
B1 Repetitive telling old story	13 (54.17)	5 (19.23)	0.010
B2 Momentary confabulation*	11 (45.83)	3 (11.54)	0.007
B3 Tangential speech/Speech circumlocution	9 (37.50)	3 (11.54)	0.032
B4 Refuse or denial speech	13 (54.17)	6 (23.08)	0.024
B5 Head turning (while answering questions)	7 (29.17)	6 (23.08)	0.624
B6 Repetitive questioning*	17 (70.83)	9 (34.62)	0.010

[1]Number (percentage) of participants that reported episodic memory decline to each question.

[2]Number (percentage) of participants that reported having at least once (on average) per day of the following episodic memory decline symptoms in the past month.

*These 3 symptoms had the best diagnostic performance in parsimonious model predicting AD.

Abbreviation: A+T+, Alzheimer's disease; A+T- Alzheimer's pathologic change; A-T-, Non-Alzheimer's disease pathology; IQR, Interquartile range.

Figure 1 ROC curves of the combination of 3 episodic memory decline symptoms for predicting Alzheimer's disease (A+T+) detected by PET.

Delivering Care Through Telemedicine During the COVID-19 Pandemic Reduces the Risk of Unplanned Hospital Visits

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Abstract

Introduction: Providing care via telemedicine has been suggested worldwide during COVID-19 pandemic to reduce the risk of disease transmission. The Department of Medicine at Siriraj hospital has delivered telemedicine service during the COVID-19 pandemic by setting up the "Telephone to Treatment" or "2T SAVE COVID-19" project.

Materials and Method: A retrospective cohort study was conducted to compare clinical outcomes of the patients receiving the telemedicine (2T group) with those under the routine care at the outpatient clinics from April 2020 to November 2021.

Results: 16,395 patients out of 81,546 patients enrolled from the Siriraj hospital's database were in the 2T group. The 2T group had a significantly lower risk of experiencing unplanned hospital visits with RR 0.60 (95%CI 0.58-0.62) p-value <0.001. The subgroup analysis was performed in 2,061 patients from the geriatric clinic data, and 1,039 patients with dementia status were found. The patients with dementia status in the 2T group were 374 patients (36%) having the unplanned hospital visits less frequently with RR 0.69 (95%CI 0.61-0.80) p-value <0.001, as well.

Conclusion: The telemedicine under the project "2T SAVE COVID-19" was associated with prevention of unplanned hospital visits. Implementation of this strategy in the older adults with cognitive impairment might lead the patients easily to access the treatment.

Keywords: Telemedicine, Unplanned visit, Chronic diseases, COVID-19, Older people

Cognitive Manifestations in Patients with Autoimmune Encephalitis

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Abstract

Background: Autoimmune encephalitis (AE) could present with heterogeneous clinical manifestations, including cognitive impairment.

Objectives: This study aimed to investigate and categorize the cognitive manifestations and evaluate the treatment outcomes in Thai patients with AE.

Materials and methods: A retrospective chart review study of AE was done at Siriraj Hospital, Mahidol University. The data between 2009-2022 was extracted. Thirty-seven patients were diagnosed with AE. Cognitive manifestations were collected and classified into five categories: memory, perceptual-motor, attention, executive function, and language.

Results: Among 37 patients who were diagnosed with AE, 32 (87.2%) were seropositive with 10 different antibodies, and 5 (12.8%) were seronegative. The most identified antibodies were anti-NMDAR (n=13, 33.2%) and anti-LGI1 antibodies (n=8, 20.5%). 69.2% of AE patients reported at least one cognitive domain dysfunction. The most frequently affected domains were memory (64.1%), executive function (51.3%), and attention (41%). The proportions of patients with cognitive manifestations were not different in the anti-NMDAR encephalitis (61.5%), anti-LGI1 encephalitis (87.5%), and other-antibody encephalitis group (66.7%) (p=0.43). Cognitive performances were evaluated in most patients; the mean TMSE score was 21.55.3 (n=14), and the mean MoCA score was 15.16.9 (n=17). Patients showed improvement in cognitive performance at six months after treatment (MoCA from 15.16.9 to 24.03.9, p<0.01), but not at 12 months.

Conclusions: Cognitive symptoms are common in Thai patients with AE. Memory impairment, executive dysfunction, and attention deficits were frequently observed. Cognitive performance showed improvement six months after treatment.

Keywords: Autoimmune encephalitis, Cognitive manifestation

Ability to Use Electronic Devices and Online Platforms of Thai Patients with Mild Cognitive Impairment and Mild Dementia

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Abstract

Introduction: Electronic devices and online platforms have a significant impact on our daily lives and may be used to provide cognitive stimulation to patients with cognitive impairment at home.

Objectives: The aim of this study is to examine the ability of Thai patients with mild cognitive impairment (MCI) and mild dementia, as well as their caregivers, to utilize electronic devices and online platforms.

Materials and Methods: A questionnaire-based study was conducted on Thai patients with MCI and mild dementia. There were three categories of electronic device ability: inability to use, ability to use only simple devices (basic phones, CD players, or radios), and use of smart devices (smartphones, tablets, or computers). The ability to use online platforms was also collected and categorized as follows: no use, limited use of only simple online platforms (Line texting, Facebook, or YouTube), and use of smart telecommunication online platforms (Line video calls, Facetime, or Zoom).

Results: This study enrolled 157 patients, 46.5% with MCI and 53.5% with mild dementia. The demographic data showed a statistically significant difference between the two groups in mean age (72.5±6.9 vs. 79.4±7.3 years in MCI and mild dementia, respectively, P<0.001) and educational level (60.3% vs. 35.7% with a college degree or higher in MCI and mild dementia, respectively, P<0.001). The ability to use electronic devices and online platforms was different between the two groups. In the MCI group, 79.5% were able to use smart devices, and 49.3% were able to use smart telecommunication online platforms, compared to only 26.2% (P<0.001) and 11.9% (P<0.001) in the mild dementia group. The majority of the mild dementia group could use only simple devices (38.1%) and were unable to use any online platforms (77.4%). The study found a difference in electronic device and platform usage based on age, body mass index, Thai Mental State Examination, and education, but no difference based on sex, comorbidities, family income, or Thai Geriatric Depression Scale-15 score. Most caregivers of all patients were able to use smart devices (98%) and smart telecommunication online platforms (83.1%).

Conclusion: The capacity to use electronic devices and online platforms is associated with cognitive status. With the assistance of the caregivers, it is possible to develop home-based cognitive stimulation programs for Thai patients with MCI and mild dementia using telecommunication online platforms.

Keywords: Electronic devices, Online platforms, Mild cognitive impairment, Mild dementia